

REVISION OF THE *RHODOMYRTUS TRINEURA* (F. MUELL.) F. MUELL. EX BENTH. (MYRTACEAE) SPECIES COMPLEX

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Summary

The *Rhodomyrtus trineura* species complex is revised. *R. novoguineensis*, *R. canescens* and *R. sericea* are reinstated as species distinct from *R. trineura*. *R. pervagata*, *R. trineura* subsp. *capensis* and *R. effusa* from Australia and *R. lanata* and *R. montana* from New Guinea are described as new. A key to the species is provided and the new species illustrated.

Introduction

Scott (1978) recognised four varieties of *Rhodomyrtus trineura* (F. Muell.) F. Muell. ex Benth., viz var. *trineura*, var. *novoguineensis* (Diels) A.J. Scott, var. *macrophylla* Domin, and var. *canescens* (C. White & Francis) A.J. Scott. The differences in the habit, habitat, leaf and floral morphology of these taxa necessitates their elevation to specific rank. *Rhodomyrtus sericea* Burret, included within *R. trineura* var. *trineura* by Scott (1978), is also specifically distinct. In addition, two allied species from New Guinea need formal description. Both are described from material included by Scott under *R. trineura* var. *novoguineensis*.

Floral and fruit measurements given are based on material preserved in spirit or reconstituted material.

Key to *Rhodomyrtus trineura* and Related Species

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|--|-----------------------------|
| 1. Ovules/seeds in 16-22 rows; fruits ellipsoidal | 2 |
| Ovules/seeds in 3-12 rows; fruits globular or subglobular | 3 |
| 2. Abaxial leaf surface villous, hairs dense; pedicels to 2 mm long. | |
| NE New Guinea | 7. <i>R. lanata</i> |
| Abaxial leaf surface pubescent, hairs mid-dense; pedicels 2-5 mm long. | |
| New Guinea | 6. <i>R. novoguineensis</i> |
| 3. Inflorescences monads, rarely triads; tomentum of branchlets and leaves | |
| erect or erect as well as appressed | 4 |
| Inflorescences triads and monads; tomentum of branchlets and leaves | |
| appressed. NE Australia | 3. <i>R. canescens</i> |
| 4. Pedicels 5-14 mm long | 5 |
| Pedicels to 5 mm long | 6 |
| 5. Ovules/seeds in 3-5 rows. NE Australia | 1. <i>R. trineura</i> |
| Ovules/seeds in 7-10 rows. NE Australia | 4. <i>R. pervagata</i> |
| 6. Leaves 1.5-3.8 cm wide; small trees or shrubs | 7 |
| Leaves 4-8.5 cm wide; straggling shrubs. NE Australia | 5. <i>R. effusa</i> |
| 7. Leaves sericeous or pubescent below; inflorescences 2 per axil | 8 |
| Leaves ferruginous-villous below; inflorescences 1 per axil. West | |
| Irian | 8. <i>R. montana</i> |
| 8. Leaves pubescent below, hairs erect, mid-dense; ovules/seeds in 3-5 rows. | |
| NE Australia | 1. <i>R. trineura</i> |
| Leaves sericeous below, hairs erect and appressed, dense; ovules/seeds in | |
| 6-9 rows. NE Australia | 2. <i>R. sericea</i> |

1. *Rhodomyrtus trineura* (F. Muell.) F. Muell. ex Benth., Fl. austral. 3: 272 (1866). *Myrtus trineura* F. Muell., Fragm. 4: 177 (1864). Type: Peak Range, Rockingham Bay, 2 March 1864, J. Dallachy 1 (lecto (designated here): MEL).

Spreading shrub to 1–3(–5) m; bark smooth, brown. Branchlets and young leaves ferruginous pubescent with erect hairs 0.3–0.9 mm long. Lamina ovate or ovate-lanceolate, 5–12 cm long, 1.5–3.7 cm wide, glabrous above except for hairs along midvein, pubescent below with mid-dense erect hairs 0.5–1 mm long, 3-veined above the base, apex acuminate or acute; base attenuate; venation raised below, midrib sunken above; primary marginal veins 4–6 mm from base, 2–4 mm from margin; oil glands distinct, sparse to mid-dense. Petiole pubescent, 3–6(–9) mm long. Inflorescences 2 per axil, monads, 10–16 mm long; pedicels pubescent, 2–10 mm long; pherophylls and metaxyphylls lanceolate, pubescent, deciduous, 2–3 mm long. Flowers 5-merous; perigynium pubescent, 2.8–3.3 mm long and 3.3–3.6 mm diameter at anthesis. Calyx lobes ovate, acute, pubescent, 2.5–3 mm long, 2.2–2.5 mm wide. Petals white or pinkish, obovate, pubescent or villous outside, except for glabrous margins, glabrous inside, 5.6–7 mm long, 4.6–6 mm wide. Stamens 125–134, ± in 4 whorls; filaments 3–3.5 mm long; anthers 0.6–0.7 mm long. Ovary 3-locular, summit puberulent; ovules 6–10 per loculus in 2 series of 3–5 on axile placentas; style puberulent at base, glabrous above, 4–5 mm long; stigma capitate, 0.5–0.6 mm diameter. Fruit cream, globular, pubescent, crowned by persistent calyx lobes, 10–12 mm long, 10–12 mm diameter. Seeds 18–30, reniform, flattened, 1.4–1.7 mm long.

Two subspecies are recognised.

1a. *R. trineura* subsp. *trineura*

Petals pubescent; pedicels 2–6 mm long.

Selected specimens: Queensland. NORTH KENNEDY DISTRICT: Mt Koolmoon Forest Reserve, about 7 miles [11.7 km] S of Ravenshoe, Aug 1963, *Schodde* 3292 (BRI); Mission Beach, 17°55'S, 156°05'E, Nov 1963, *Hyland* 03086 (BRI); Hobans Creek on Mission Beach Road 4 miles [6.4 km] from Tully, Jun 1970, *Moriarty* 276 (BRI); Dunk Island on hill behind Brammo Bay, 18°55'S, 146°09'E, Nov 1970, *Webb & Tracey* 10685 (BRI); Mount Kootaloo, Dunk Island, 17°57'S, 146°10'E, Nov 1985, *Sharpe* 4237 (BRI); S.F. 702, south bank of Murray River near mouth, 18°05'S, 146°01'E, Oct 1975, *Thorsborne* 116 (BRI); Kirrama, 19°07'S, 145°37'E, Jul 1947, *Smith* 3194 (BRI); Cardwell forestry area, Aug 1980, *Williams* 80156 (BRI); Five Mile Creek near Cardwell upstream from Highway, Aug 1979, *Byrnes* 3925 (BRI); Gould Island, Rockingham Bay, Aug 1865, *Dallachy* [AQ 278670] (BRI); Agnes Island, close to Hinchinbrook Island, 18°20'S, 146°19'E, Aug 1975, *Sharpe* 1762 (BRI); upper reaches of North Zoe Creek, Hinchinbrook Island, 18°21'S, 146°16'E, Jul 1988, *Fell* 1162 (BRI); W of Ingham, near Wallaman Falls, Aug 1951, *Blake* 18806 (BRI); near Witts Lookout, Mt Spec National Park, Mar 1988, *Fell* 674 (BRI); about 4 km W of Paluma, 19°01'S, 146°10'E, Jan 1986, *Guymer* 2011 (BRI). SOUTH KENNEDY DISTRICT: Dalrymple Heights and vicinity, Aug 1947, *Clemens* [AQ 045226] (BRI,L); Cape Hillsborough, 20°55'S, 149°02'E, Dec 1987, *Thomson* 126 (BRI). PORT CURTIS DISTRICT: Shoalwater Bay Military Reserve, CSIRO ISOPOD site, c. 2.5 km N of Mt Parnassus, 22°48'S, 150°35'E, Jul 1977, *Clarkson & Stanley* 672 (BRI); Water Park Creek, 3.5 km NE of Byfield, Livingstone Shire, 22°49'S, 150°39'E, Aug 1985, *Anderson* 4010 (BRI); Byfield near Keppel Bay, Sep 1931, *White* 8016 (BRI).

Distribution and habitat: This subspecies is found from Ravenshoe to Byfield, Queensland and occurs on the margins of notophyll vine forest, along creeks and occasionally in open forests at altitudes from near sea-level to 800 m.

- 1b. *R. trineura* subsp. *capensis* Guymer, subsp. nov. differt ab subsp. *trineurae* petalis villosis et pedicellis longioribus (3–10 mm longis). **Typus:** Queensland. COOK DISTRICT, McIlwraith Ra., T.R. 14, Leo Creek road, 13°45'S, 143°20'E, September 1975, *B. Hyland* 8383 (holo: BRI; iso: BRI,QRS distribuendi).

Distinguished from *R. trineura* subsp. *trineura* by the villous petals and longer pedicels (3–10 mm long).

Specimens examined: Australia. Queensland. COOK DISTRICT: Iron Range, Jun 1948, *Brass* 19333 (BRI,L); Mt Tozer near Iron Range, 12°45'S, 143°12'E, Nov 1977, *Tracey* 14851 (BRI,QRS); Hill E of Mt Tozer, Iron Range area, 12°45'S, 143°13'E, Nov 1977, *Tracey* 14203 (BRI,QRS); Claudie River, 12°45'S, 143°15'E, Sep 1976, *Hyland* 9029 (BRI,L,QRS); ditto, Oct 1974, *Hyland* 7806 (BRI,L,QRS); ditto, Oct 1973, *Irvine* 671 (BRI,QRS); Mt Carter, 13°00'S, 143°15'E, Sep 1974, *Hyland* 7554 (BRI,L,QRS); T.R. 14, McIlwraith Range, Leo Ck road, 13°45'S, 143°20'E, Sep 1975, *Hyland* 8383 (BRI,QRS); ditto, *Hyland* 8390 (BRI,QRS); McIlwraith Range, 13°50'S, 143°15'E, Sep 1974, *Hyland* 7645 (BRI,L,QRS); Headwaters of Massy Ck near old mining site, McIlwraith Range, 13°50'S, 143°20'E, Oct 1969, *Webb & Tracey* 9129 (BRI); Headwaters of Lankelly Creek on western fall of McIlwraith Range, 13°52'S, 143°20'E, Oct 1969, *Webb & Tracey* 9531 (BRI); Lankelly Creek on western fall of McIlwraith Range, 13°55'S, 143°15'E, Oct 1969, *Webb & Tracey* 9637 (BRI).

Distribution and habitat: This subspecies is found from Iron Range to McIlwraith Range, Cape York Peninsula, Queensland and occurs on the margins of mesophyll or notophyll vine forest at altitudes of 20 to 600 m.

Phenology: This species flowers from August to January with occasional records for May. Fruiting specimens have been collected in June, October to January, and March and May.

Notes: *R. trineura* is distinguished from other species in this complex by its spreading shrubby habit, mid-dense leaf tomentum and ovules/seeds in 3 to 5 rows.

There are two specimens of Dallachy's in MEL which were collected before Mueller's publication of this species. The Dallachy specimen collected on 26 January 1864 has smaller leaves than that given by Mueller, whereas the specimen collected on 2 March 1864 agrees with Mueller's protologue. Hence this latter specimen has been selected as the lectotype of *R. trineura*.

2. *Rhodomyrtus sericea* Burret, Notizbl. Bot. Gart. Berlin 15: 497 (1941). Type: Australia, Queensland. COOK DISTRICT, Mt Bellenden-Ker, *W. Sayer* s.n. (holo: B†; iso: MEL).

Shrubs or small trees, 2–6(–8) m tall, d.b.h. to 10 cm; bark smooth, reddish brown to dark brown. Branchlets and young leaves sericeous with erect and appressed silken brown hairs 0.2–1 mm long. Lamina elliptic to lanceolate, (3–)4–9 cm long, 1.4–1.7 cm wide, glabrous above except for hairs along primary veins, sericeous or velutinous below with dense erect and ± appressed hairs 0.2–0.5 mm long, 3-veined above the base, apex acuminate, base cuneate or attenuate, often decurrent with petiole; margins recurved; venation raised below, midvein sunken above; primary marginal veins 3–7 mm from base, 1–2 mm from margin; oil glands distinct, moderately dense. Petiole pubescent, 5–9 mm long. Inflorescences 2 per axil, monads, rarely triads, 12–20 mm long; pherophylls and metaxophylls pubescent, lanceolate, acute, 2–2.5 mm long. Flowers 5-merous; perigynium pubescent, 2.5–3.4 mm long, 2.8–3.5 mm diameter at anthesis. Calyx lobes rounded or semi-circular, pubescent, 2–2.6 mm long, 2.4–3.1 mm wide. Petals white, obovate, puberulent outside except for the margins, glabrous inside, 6–8 mm long, 4.5–6 mm wide. Stamens 130–144, ± in 4 whorls; filaments 4.8–5.5 mm long; anthers with 3–5 oil glands along connective, 0.6–0.7 mm long. Ovary 3-locular, summit puberulent; ovules 12–18 per loculus in 2 series of 6 to 9, on axile placentas; style pubescent at base, glabrous above, 5–6 mm long; stigma capitate, 0.5–0.65 mm diameter. Fruits cream or pale brown, globular, pubescent, crowned by persistent calyx lobes, 12–13.5 mm long, 10–11 mm diameter. Seeds 36–54, reniform, flattened, 1.6–1.8 mm long.

Selected specimens: Australia, Queensland. COOK DISTRICT: Mt Finnegan, Sep 1943, *Brass* 20134 (BRI); summit of Mt Finnegan, 15°47'S, 145°17'E, Aug 1972, *Webb & Tracey* 10839 (BRI); N.P.R. 164, Thornton Peak, 16°10'S, 145°20'E, Nov 1973, *Hyland* 7058 (BRI); Thornton Peak, Mar 1932, *Brass* 2297 (BRI); V.C.L. Noah, Mt Hemmant, 16°10'S, 145°25'E, Oct 1975, *Hyland* 8488 (BRI); Mt Spurgeon, 16°26'S, 145°12'E, Sep 1936, *White* 10606 (BRI); 21 km along Mt Lewis Rd, Jan 1986, *Guymer* 2020 (BRI); summit of Mt Demi, 16°30'S, 145°19'E, Feb 1932, *Brass* 2098 (BRI); Mt Windsor, Mar 1941, *Carr* 13a (BRI); S.F.R. 143, Leichhardt L.A., 16°36'S, 145°17'E, Dec 1981, *Hyland* 11423 (BRI); Mt Lewis, 16°3–S, 145°1–E, Oct 1982, *Williams* 82198 (BRI); ditto, *Williams* 82204 (BRI); end of Mt Lewis Rd, 16°35'S, 145°15'E, Aug 1957, *Smith* 10086 (BRI); Bellenden Ker Range, 17°15'S, 145°50'E, Oct 1974, *Hyland* 7767 (BRI); Centre peak near TV tower, summit of Bellenden Ker, Nov 1972, *Webb & Tracey* 10804 (BRI); Mt Bellenden Ker near the cableway terminus, Sep 1986, *Clarkson* 6572 (BRI); Bellenden Ker, Jan 1923, *White* s.n. (BRI); Mt Bellenden Ker, c. 0.5 miles [0.8 km] SW of centre peak, Jun 1969, *Smith* 14633 (BRI); Mt Bartle Frere, Oct 1929, *Kajewski* 1282 (BRI); Bartle Frere, summit of south peak, Jun 1961, *Martin & Hyland* 1894 (BRI); Bartle Frere, 4,200 ft to summit, Oct 1967, *Scarath-Johnson* s.n. (BRI).

Distribution and habitat: *R. sericea* is endemic in NE Queensland from Mt Finnegan to Mt Bartle Frere at altitudes of 900–1650 m. It occurs on the margins of microphyll-notophyll vine-fern forests, in windswept microphyll mossy thickets and in wet sclerophyll forest adjoining these vine forest types. It grows on a variety of soil types derived mainly from granite.

Phenology: This species flowers from August to December and fruits from December to June.

Notes: *R. sericea* is distinguished from *R. trineura* by its sericeous leaves and ovules/seeds in 6 to 9 rows.

3. *Rhodomyrtus canescens* C. White & Francis, Queensland Dept. of Agric. Bot. Bull. 22: 26 (1920); *Rhodomyrtus trineura* var. *canescens* (C. White & Francis) A.J. Scott, Kew Bull. 33: 325 (1978). **Type:** Australia, Queensland, COOK DISTRICT, Atherton, January 1918, *C.T. White* [AQ 278660] (holo: BRI; iso: K).

Shrubs 1.5–4 m tall, bark smooth, grey. Branchlets and young leaves puberulent with appressed simple hairs 0.1–0.3 mm long. Lamina lanceolate or elliptic, 4.5–10(–12) cm long, 1.5–3(–3.5) cm wide, glabrous or with occasional appressed hairs above, canescent below (hairs appressed 0.1–0.25 mm long), 3-veined above the base; apex acuminate; base attenuate or cuneate; venation slightly raised above except for sunken midrib, raised below; primary marginal veins 4–10 mm from base, 1.5–3 mm from margin; oil glands distinct, moderately dense. Petiole canescent, 5–8 mm long. Inflorescence 1 per axil, metaxytriads, 15–35 mm long; pedicels canescent, (3–)4–10 mm long; perophylls and metaxyphylls ovate, acute, caducous, canescent, 2–3.2 mm long. Flowers 5-merous; perigynium canescent, 2.8–3.3 mm long, 3–3.5 mm diameter at anthesis. Calyx lobes rounded or semi-circular, canescent, 2–2.6 mm long, 2.1–4 mm wide. Petals white, obovate, glabrous or canescent outside with glabrous margins, 8–10 mm long, 6.5–7.5 mm wide. Stamens 165–176, \pm in 4 whorls; filaments 4–5 mm long; anthers 0.5–0.65 mm long. Ovary 3-locular, summit puberulent; ovules 14–16 per loculus, in 2 series of 7 or 8, on axile placentas; style puberulent at base, glabrous above, 5.5–6 mm long; stigma capitate, 0.6–0.7 mm diameter. Fruits pale cream, globular, puberulent, crowned by persistent calyx lobes, 6.6–11 mm long, 4.5–7.1 mm diameter. Seeds 42–48, reniform, flattened, finely sculptured, 1.6–2 mm long.

Selected specimens: Australia, Queensland, COOK DISTRICT: Davies Creek, Lamb Range, Oct 1967, *Brass* 33723 (BRI); Davies Creek L.A., 17°04'S, 145°36'E, Mar 1988, *Forster* PIF 3869 & *Liddle* (BRI); S.F.R. 185, c. 5 km N of Tinaroo Falls Dam, 17°05'S, 145°36'E, Mar 1976, *Moriarty* 1984 (BRI); Noel L.A. Tinaroo Range, 17°07'S, 145°33'E, Nov 1981, *Kanis* 2149 (BRI); Tinaroo Range, on road from Downfall Creek, Feb 1962, *Webb & Tracey* 5759 (BRI); S.F.R. 194 Western, 17°16'S, 145°25'E, Feb 1981, *Gray* 1902 (BRI); Herberton Range S.F., W of Atherton, 17°17'S, 145°26'E, Jan 1986, *Guymer* 2028 (BRI); S.F.R. 194, c. 6 km WSW of Atherton, 17°17'S, 145°26'E, Mar 1976, *Moriarty* 1974 (BRI, NSW); S.F.R. 194, Barron, 17°17'S, 145°31'E, Jan 1972, *Irvine* 143 (BRI); S.F.R. 194, Western, 17°19'S, 145°26'E, Feb 1982, *Gray* 2458 (BRI); S.F.R. 99, Western, Dec 1956, *Volck* QF57/108 (BRI); Evelyn Scrub, New Crater Rd, 17°25'S, 145°30'E, undated, *Hamilton brothers* [AQ 45077] (BRI); S.F.R. 194, Hugh Nelson Ra., 17°27'S, 145°29'E, Nov 1981, *Gray* 2292 (BRI); Microwave Tower Rd near The Crater, 17°28'S, 145°29'E, Oct 1986, *G. Sankowsky* 575 & *N. Sankowsky* (BRI); c. 13 km SW of Atherton on ranges near Moomin, Sep 1950, *Smith* 4664 (BRI); R99, compartment 50, Nov 1958, *Smith* 10437a (BRI). NORTH KENNEDY DISTRICT: Herberton-Ravenshoe Rd, 1972, *Althofer* 313 (BRI); c. 13 km N of Ravenshoe, *Smith* 5039 (BRI); Ravenshoe, Apr 1945, *Flecker* 9196 (BRI); Glendinning Rd, Ravenshoe, Aug 1967, *Barnes* s.n. (BRI).

Distribution and habitat: This species is endemic in north east Queensland from the Lamb Range to Ravenshoe at altitudes of 750 to 1200 m. It occurs in or on the margins of simple or complex notophyll vine forests.

Phenology: This species flowers from late September to December and fruits from December to April.

Notes: *R. canescens* is readily distinguished from other species within the *R. trineura* group by its pedunculate inflorescences (metaxytriads) and fine appressed indumentum.

4. *Rhodomyrtus pervagata* Guymer, sp. nov. affinis *R. trineurae* (F. Muell.) F. Muell. ex Benth. sed foliis majoribus (7–18 × 2.3–7 cm), pedicellis longioribus (5–14 mm longis) et habitu arboreo differt. **Typus:** Australia, Queensland, COOK DISTRICT, 15 km along Mt Lewis Rd, off Julatten – Mareeba Rd (16°34'S, 145°16'E), January 1986, *G.P. Guymer* 2017 (holo: BRI; iso: BRI, CANB, K, L, MEL, MO, NE, NSW, QRS distribuendi).

Rhodomyrtus trineura var. *macrophylla* Domin, Biblioth. Bot. 22: 474 (1928). **Type:** Lake Eacham, February 1910, *Domin* 7310 (lecto (designated here): PR).

Small trees 3–8(–10) m tall, d.b.h. 6–14 cm; bark smooth, grey or dark brown. Branchlets and young leaves densely pubescent with erect ferruginous simple hairs 0.2–0.6 mm long. Lamina elliptic to lanceolate, occasionally ovate, 7–14.6(–18) cm long, 2.3–5.5(–7) cm wide, glabrous above except for hairs along primary veins, pubescent below with mid-dense erect simple hairs 0.2–0.6 mm long, 3-veined above the base, apex long-acuminate; base attenuate to cuneate; venation raised below, primary veins sunken above; primary marginal veins 3–9 mm from base, 2–6 mm from margin; oil glands distinct, moderately dense. Petiole pubescent, 5–13 mm long. Inflorescences 2 or 3 per axil, monads, rarely metaxytriads, 12–18 mm long; pedicels ferruginous-pubescent, 5–14 mm

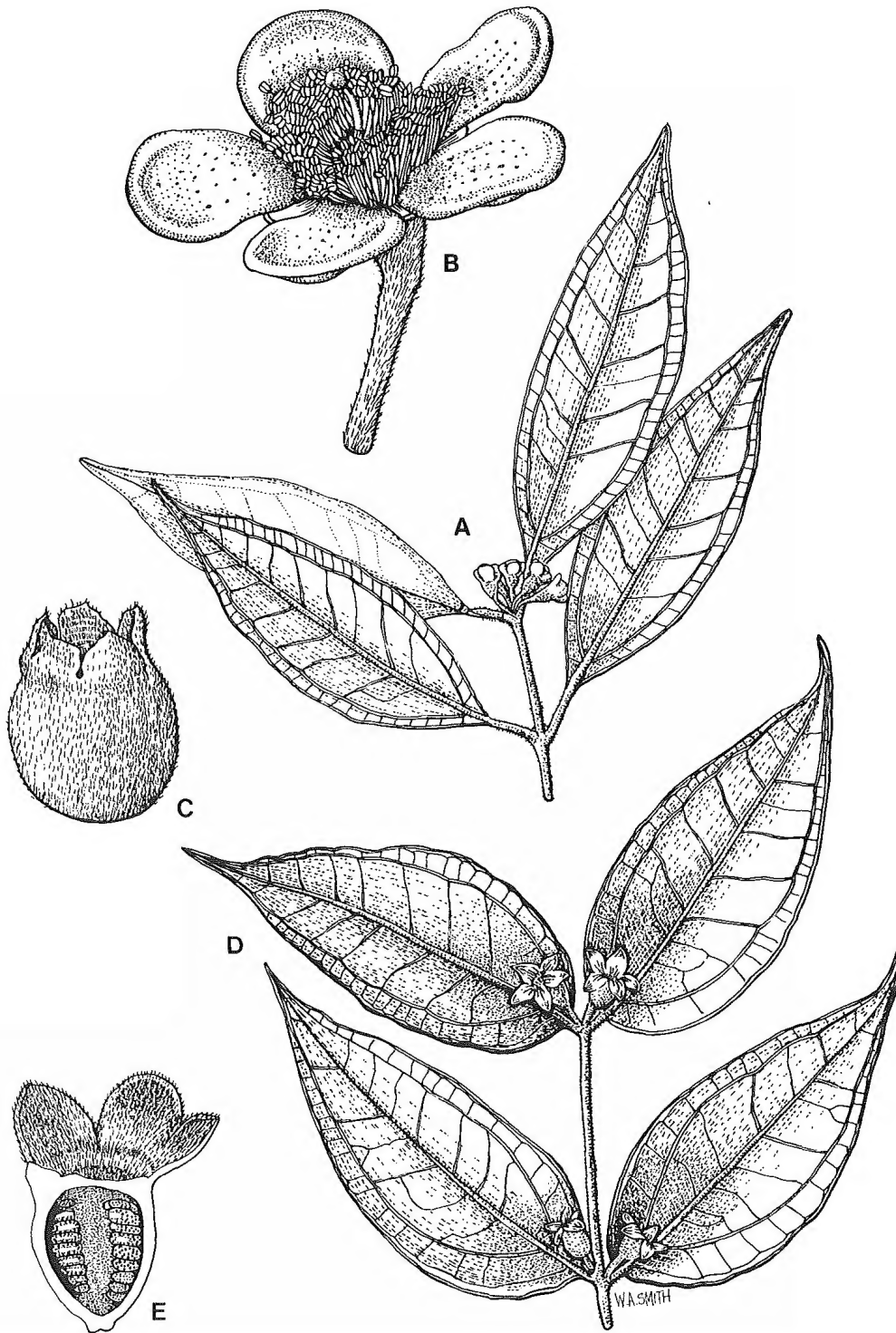


Fig. 1. *Rhodomyrtus pervagata*: A, flowering branchlets $\times 0.5$. B, flower $\times 3$. C, fruit $\times 2$. *Rhodomyrtus effusa*: D, fruiting branchlets $\times 0.67$. E, L.S. of fruit $\times 3$. A-C Guymer 2017; D,E, Guymer 2059.

long; perophylls and metaxyphylls lanceolate to ovate, pubescent, deciduous, 2.8–5.1 mm long. Flowers 5-merous; perigynium ferruginous-pubescent, 2.5–3.2 mm long and 3.2–3.6 mm diameter at anthesis. Calyx lobes rounded or semi-circular, ferruginous-pubescent outside, sericeous inside, 2.7–3.1 mm long, 3–3.5 mm wide. Petals white, cream or pale pink, obovate, sericeous outside, glabrous around the margins, glabrous inside, 8–10 mm long, 5–6 mm wide. Stamens 160–180, \pm in 4 whorls; filaments cream or pink, 4.5–6 mm long; anthers with 2–5 oil glands along connective, 0.6–0.8 mm long. Ovary 3-locular, summit puberulent; ovules 14–20 per loculus, in 2 series of 7–10, on axile placentas; style puberulent at base, glabrous above, 6.5–8 mm long; stigma capitate, 0.5–0.7 mm diameter. Fruit cream when mature, globular to doliiform, puberulent, crowned by persistent calyx lobes, 12–18 mm long, 10–13 mm diameter. Seeds 42–60, reniform, flattened, finely sculptured, 1.9–2.2 mm long. **Fig. 1 A–C.**

Selected specimens: Australia. Queensland. COOK DISTRICT: S.F.R. 144, Fantail L.A., Mt Windsor Tableland, 16°12'S, 145°05'E, Mar 1981, *Unwin* 762 (QRS); 15 km along Mt Lewis rd, 16°34'S, 145°16'E, Jan 1986, *Guymer* 2017 (BRI,CANB,K,L,MEL,MO,NSW); Barron Falls track, 16°51'S, 145°39'E, Jan 1986, *Guymer* 2056 (BRI,QRS); Davies Ck, 16°55'S, 145°32'E, Jan 1962, *Webb* 5558 & *Tracey* (BRI,K); 17°00'S, 145°35'E, Jan 1972, *Hyland* 5770 (BRI,K,QRS); Copper Lode Falls Dam area, Cairns, 17°00'S, 145°40'E, Dec 1972, *Birch* 32 (BRI); S.F.R. 185, c. 5 km N of Tinaroo Falls Dam, 17°05'S, 145°36'E, Apr 1976, *Moriarty* 1978 (BRI,QRS); S.F.R. 185, Haig L.A., 17°05'S, 145°36'E, Jul 1976, *Moriarty* 2136 (BRI,QRS,L); S.F.R. 185, Emerald LA, 17°06'S, 145°35'E, May 1971, *Dockrill* 86 (BRI,K,L,NSW,QRS); Tree Ck, a tributary of Mulgrave River, 17°10'S, 145°50'E, Feb 1929, *Tarden* s.n. (BRI); Lake Eacham, Feb 1910, *Domin* 7310, 7311, 7312, 7313 (all PR); Herberton Ra., 17°19'S, 145°26'E, Jan 1986, *Guymer* 2027 (BRI,CBG,NE); 2.5 km along Boonjee rd, E of Lamin's Hill, 17°22'S, 145°44'E, Jan 1986, *Guymer* 2065 (BRI); S.F.R. 310, Swipers L.A., 17°22'S, 145°44'E, Jan 1986, *Guymer* 2065 (BRI); Reserve 404, Dirran-Elinjaa Falls, 17°28'S, 145°39'E, Mar 1982, *Hyland* 11710 (BRI,QRS); S.F.R. 650, Mt Fisher, E/P 29, 17°33'S, 145°33'E, Nov 1975, *Sanderson* 799 (BRI,L,QRS); S.F.R. 756, West Charappa L.A., 17°42'S, 145°40'E, Jul 1979, *Stocker* 1737 (QRS); S.F.R. 605, Luff L.A., 17°58'S, 145°36'E, Feb 1982, *Hyland* 11703 (BRI,QRS); c. 1 km E of Paluma, 19°00'S, 146°14'E, Jan 1986, *Guymer* 2013 (BRI,CANB,MEL,NSW).

Distribution and habitat: *Rhodomirtus pervagata* is endemic in north-east Queensland from Mt Windsor Tableland (16°12'S) to Paluma (19°S) and is found between 400 and 1250 m altitude. The species occurs in simple and complex notophyll vine forests on soils derived from granite, granodiorite or basalt.

Phenology: This species flowers from October to February, and sometimes May or June. Fruiting specimens have been collected from January to July.

Affinities: *Rhodomirtus pervagata* has a leaf tomentum similar to that of *R. trineura* but is distinguished from that species by its larger leaves, longer pedicels and arborescent habit.

Etymology: Named from the Latin '*pervagata*' (common), in reference to the occurrence of this species along road verges throughout its distributional range.

5. *Rhodomirtus effusa* Guymer, sp. nov. a *R. novoguineensi* Diels nervis lateralibus foliorum paucioribus (4–7), ovulis paucioribus (60–72), bacca subglobosa, foliis latioribus (4–8.5 cm latis) et statura minore differt. **Typus:** Queensland, COOK DISTRICT, c. 2 km along Whyanbeel-Daintree track, from Whyanbeel Ck (16°22'S, 145°20'E), January 1986, *G.P. Guymer* 2059 (holo: BRI; iso: BRI,CANB, K,L,MEL,MO,NSW distribuendi).

Straggling shrubs to 4 m tall; bark smooth grey or brown. Branchlets and young leaves ferruginous-villous with simple hairs 0.5–1.2 mm long. Lamina ovate to ovate-lanceolate, 8–18 cm long, 4–8.5 cm wide, glabrous above or pubescent along primary veins above, pubescent below with ferruginous erect simple hairs 0.3–1.5 mm long, hairs dense along veins, sparse elsewhere, 3-veined twice above the base; apex acuminate to caudate; base cordate to truncate; venation raised below, primary and secondary sunken above, distinct; primary marginal veins (lowermost pair): 1–3 mm from base, 1–4(–7) mm from margin, (uppermost pair): 3–10(–12) mm from base, (2–)4–14(–18) mm margin; lateral veins 4–7 pairs; oil glands obscure, moderately dense to sparse. Petiole pubescent, 2–5 mm long. Inflorescence 1 or 2 per axil, monads, 12–16 mm long; pedicels ferruginous-villous, 3–6 mm long; prophylls ovate to broadly ovate, ferruginous-villous, deciduous, 2.5–4 mm long, 2–3 mm wide. Flowers 5-merous; perigynium ferruginous-villous, 3–3.5 mm long, and 2–3 mm diameter at anthesis. Calyx lobes broadly ovate or slightly obovate, acute or obtuse, ferruginous-villous outside, glabrous inside, caducous, 4–6 mm long, 3.5–4.5 mm wide. Stamens 203–215, \pm in 4 or 5 whorls; filaments 1.5–3.5 mm long; anthers 0.5–0.7 mm long. Ovary 3-locular, summit pubescent; ovules 20–24 per loculus, in 2 series of 10–12, on axile placentas; style pubescent at base, glabrous above, 4–5 mm

long; stigma capitate 0.4–0.5 mm diameter. Fruit cream when ripe, subglobular, pubescent, crowned by persistent calyx lobes, 5–8 mm long, 5–7 mm diameter (not seen fully mature). Fig. 1 D & E.

Specimens examined. Australia. Queensland. COOK DISTRICT: Granite Ck, lower Bloomfield R., Sep 1960, *Smith* 11078 (BRI,K); c. 25 km NNW of Daintree, Nov 1967, *Boyland* 417 (BRI,K); Height of Alexandra, c. 7 1/4 miles [12 km] NE of Daintree, Oct 1962, *Smith* 11503 (BRI,K); N bank of Daintree, R., Feb 1932, *Brass* 2212 (BRI); ditto, Dec 1929, *Kajewski* 1438 (BRI,K); Stewart Ck, (16°20'S, 145°10'E), Sep 1948, *Smith* 4043 (BRI,K); T.R. 55, Whyanbeel, (16°20'S, 145°20'E), Mar 1976, *Hyland* 8687 (QRS); T.R. 55, Jul 1974, *Hyland* 7328 (BRI,QRS); ditto, *Hyland* 7348 (BRI,QRS); Exp. E/P 35, TR 55, Whyanbeel (16°22'S, 145°26'E), Jun 1977, *Sanderson* 1208 (QRS); c. 2 km along Whyanbeel-Daintree track, from Whyanbeel Ck (16°22'S, 145°20'E), Jan 1986, *Guymer* 2059 (BRI,CANB,K,L,MEL,MO,NSW).

Distribution and habitat: *Rhodomyrtus effusa* is confined to northeast Queensland from the Bloomfield River to the Rex Range (16°22'S), at altitudes of 20–100 m. It occurs on the margins of complex mesophyll vine forests on soils derived from granite.

Phenology: This species flowers from October to December and fruits from January to April.

Affinities: This species has its closest affinities with *Rhodomyrtus novoguineensis* but differs by its fewer ovules per loculus (20 to 24) in 10 to 12 rows, its broad ovate to ovate-lanceolate leaves with fewer lateral nerves, its subglobular berry and its smaller stature.

Notes: Specimens of this species have invariably been included under *R. trineura* var. *macrophylla* (= *R. pervagata*). They can be readily distinguished from this species by their coarser tomentum, leaf shape, smaller petals and shorter pedicels as well as the straggling habit.

Conservation status: 2RC.

Etymology: The specific epithet refers to the straggling habit.

6. *Rhodomyrtus novoguineensis* Diels, Engl. Bot. Jahrb. 57: 378 (1922); *Rhodomyrtus trineura* var. *novoguineensis* (Diels) A.J. Scott, Kew Bulletin 33: 324 (1978). **Type:** Nordöstliches Neu-Guinea: In den Wäldern bei Siu, 200 m ü. M., 12 April 1909, *Schlechter* s.n. [19223] (holo: B†; iso: K,L).

Small trees to 8 m tall; bark brown, flaky. Branchlets ferruginous tomentose with simple hairs 0.2–1.0 mm long. Lamina lanceolate to ovate-lanceolate, (5–)7–15 cm long, (1.8–) 2–5.5 cm wide, glabrous above except for a few hairs along the primary veins, ferruginous-pubescent below with hairs 0.5–1(–1.6) mm long, 3-veined above the base; apex acuminate to almost caudate; base acute to cuneate; venation distinct, flush above except for primary veins which are slightly sunken, raised below, primary marginal veins 2–5 mm from base, 2–5 mm from margin, lateral veins 8–10 pairs; oil glands moderately dense or sparse, distinct. Petiole pubescent, 3–5 mm long. Inflorescences 2 per axil, monads, 12–16 mm long; pedicels pubescent, 2–5 mm long; prophylls ovate or ovate-lanceolate, tomentose, 2–4 mm long, 1.2–2.6 mm wide. Perigynium mostly ellipsoidal, villous, 3.4–5.5 mm long, 2.2–3.2 mm diameter at anthesis. Calyx lobes, semicircular to broadly ovate, villous, persistent, 2.2–3 mm long, 1.5–2.4 mm wide. Petals 4 or 5, white, broadly ovate to ovate or orbicular, ferruginous-villous outside, glabrous inside or pubescent at base only, caducous, 3–4(–5) mm long, 2.5–4 mm wide. Stamens 112–130; filaments 1–1.8 mm long; anthers 0.5–0.7 mm long. Ovary 3-locular, summit pubescent; ovules 36–44 per loculus, in 2 series of 18–22 on axile placentas; style pubescent in lower half, glabrous above, 3–4 mm long; stigma capitate, c. 0.5 mm diameter. Fruit cream or pale brown, pubescent, ellipsoidal, crowned by persistent calyx lobes, 10–14 mm long, 6–9 mm diameter. Fig. 2 A & B.

Specimens examined. Papua New Guinea. BISMARCK ARCHIPELAGO: Manus Island, Kaguli Ridge, 2°05'S, 146°40'E, Oct 1974, *Foreman & Katik* LAE 59225 (BRI); Mt Dremse, 2°10'S, 146°55'E, Jun 1971, *Stone & Streimann* 10377 (BRI). WEST NEW BRITAIN PROVINCE: NNE slope of Mt Ulawon, Hoskins subdistrict, 5°02'S, 151°22'E, Feb 1971, *Lelean & Stevens* LAE 51245 (BRI,K,L). EASTERN NEW BRITAIN PROVINCE: Lower slopes of Mt Lululua, Pomio subdistrict, 5°43'S, 151°02'E, May 1973, *Steven & Lelean* LAE 58273 (BRI,K,L). WEST SEPIK PROVINCE: Prospect Creek, tributary of Frieda River, Telefomin subdistrict, 4°42'S, 141°48'E, Jun 1969, *Henty & Foreman* NGF 42614 (BRI,K,L); Carpentaria Exploration base, above Storm Ck, Dec 1977, *Hoover* 6436 (K). SEPIK PROVINCE: near Wantipi village (on Bliri R.), Aitape subdistrict, Aug 1961, *Darbyshire & Hoogland* 8365 (BRI,K,L). WESTERN HIGHLANDS PROVINCE: Shore of Lake Kapiago, Lake Kapiago subdistrict, 5°22'S, 142°33'E,

Nov 1968, *Vandenberg & Galore* NGF 42113 (BRI,K,L). MOROBE PROVINCE: Tymne - Wago track, 6°50'S, 146°42'E, Mar 1963, *Hartley* 11414 (BRI); Ekuti Divide, Bulolo - Aseki Rd, 35 km WSW of Bulolo, 7°19'S, 146°23'E, Jun 1982, *Streimann* 8375 (BRI). CENTRAL PROVINCE: Ridge SW of Efogi village, Port subdistrict, 9°10'S, 147°39'E, Sep 1973, *Foreman et al.* LAE 52473 (BRI); Mt Tafa, May-Sep 1933, *Brass* 5110 (BRI). MILNE BAY PROVINCE: Biriatabu, Nov 1925, *Brass* 577 (BRI,K); N slopes of Mt Dayman, Maneau Range, Jun 1953, *Brass* 23122 (BRI); E slopes, Goodenough Island, Oct 1953, *Brass* 24491 (BRI); Junction Ugat and Mayu Rivers, near Mayu I, Raba Raba subdistrict, 9°37'S, 149°10'E, Jul 1972, *Streimann & Katik* NGF 28988 (BRI,K,L); between Agaun and Bonenau, Baniara subdistrict, 9°54'S, 149°22'E, Aug 1969, *Pullen* 7901 (BRI,K,L).

Distribution and habitat: *R. novoguineensis* occurs on the Bismarck Archipelago and mainland Papua New Guinea from near sea-level to 2400 m. It has been recorded from *Castanopsis* rainforest, *Nothofagus* dominant montane forest and open-forest.

Phenology: Flowers and fruits have been collected throughout the year.

Notes: *Hartley* 11414 is included here although it is reported to be a liana. Specimens (*Brass* 5110, *Streimann* 8375) from above 2000 m have smaller leaves (5-8.5 × 1.8-2.5 cm) but in other characters agree with *R. novoguineensis*.

7. *Rhodomyrtus lanata* Guymmer, sp. nov. affinis *R. novoguineensis* Diels sed foliis villosis pedicellis brevioribus et petalis majoribus (4-5.5 × 3-4.5 mm) differt. **Typus: New Guinea, Edie Ck, Wau Sub-district, Morobe District, 7°45'S, 146°25'E, 14 August 1968, *Millar* NGF 12156 (holo: BRI; iso: K,L distribuendi).**

Shrubs or slender trees 2-7 m tall; bark flaky, brown. Branchlets and young leaves densely ferruginous-villous with simple hairs 0.5-2.2 mm long. Lamina ovate to ovate-lanceolate, 6-13.3 cm long, 2-5.6 cm wide, tomentose above when young, glabrescent except for the primary veins, densely ferruginous-villous below (hairs 0.5-1.2 mm long), 3-veined almost from base; apex acuminate; base broadly cuneate, occasionally acute; venation distinct, sunken above, raised below, primary marginal veins 1-3 mm from base, 3-5 mm from margin; lateral veins 8-12 pairs; oil glands of medium to sparse density, readily seen with hand lens. Petiole villous, glabrescent, 3-6 mm long. Inflorescences 2 per axil, monads, 10-13 mm long; pedicels villous, to 2 mm long; prophylls ovate, obovate or ovate-lanceolate, acute, pubescent, 3-5.5 mm long, 1.4-3 mm wide. Flowers 5-merous; perigynium ovoid or ellipsoidal, villous, 4-6 mm long, 2-4 mm diameter at anthesis. Calyx lobes semicircular, or broadly ovate, villous, persistent, 2.5-3.2 mm long, 1.8-2.5 mm wide. Petals white, ovate, acute and obtuse, ferruginous-villous or sericeous outside, glabrous inside, caducous, 4-5.5 mm long, 3-4.5 mm wide. Stamens 80-82, ± in 2 or 3 whorls; filaments 2-3.3 mm long; anthers 0.4-0.5 mm long. Ovary 3-locular, summit tomentose; ovules 32-38 per loculus, in 2 series of 16-19 on axile placentas; style pubescent at base, glabrous above, 3-4 mm long; stigma capitate, 0.4-0.5 mm diameter. Fruit cream or pale brown, ellipsoidal, villous, crowned by persistent calyx lobes, 8-13 mm long, 4.5-6.5 mm diameter (not seen fully mature). **Fig. 2 E & F.**

Specimens examined: New Guinea. SEPIK PROVINCE: Puaxi Ck, Mar 1964, *Sayers* NGF 19502 (BRI,K,L). MOROBE PROVINCE: Kaindi, May 1959, *Brass* 29576 (K); Ogeramngang, Feb 1937, *Clemens* 5452A (BRI); above Edie Ck, July 1977, *Conn* 328 *et al.* (K,L); near Haungma, Aseki Patrol Area, Apr 1966, *Craven & Schodde* 1108 (BRI,K,L); headwaters of Longimar R., Aseki Patrol Area, Apr 1966, *Craven & Schodde* 1311 (BRI,K,L); Edie Ck., c. 4 miles [6 km] SW of Wau, Apr 1963, *Hartley* 11674 (BRI,K); ditto, Jan 1964, *Sayers & Hartley* 12609 (BRI); Wau-Edie Ck rd, above Golden Ridges, Dec 1963, *Havel & School* NGF 17273 (BRI,K,L); Mt Kaindi, May 1974, *Katik & Lariyita* LAE 62065 (BRI,K,L); ditto, Dec 1978, *Kerenga & Wabo* LAE 74380 (BRI,K,L); Edie Ck, Aug 1968, *Millar* NGF 12156 (BRI,K,L); Wagau, June 1964, *Millar* NGF 23475 (BRI,K,L); Edie Ck, Nov 1966, *Ridsdale* NGF 30279 (BRI,K,L); ditto, Sept 1964, *Sayers* NGF 19935 (BRI,K,L); Wau-Salamaua Track, 14 km NE of Wau, Aug 1982, *Streimann* 8506 (K,L); summit of Mt Kainde, Mar 1978, *Verdcourt & Johns* 5110 (K); Edie Ck, Sep 1953, *Womersley* 5375 (BRI,K); Edie Ck, 10 miles [16 km] from Wau, June 1960, *Womersley & Thorne* NGF 12810 (BRI); ditto, Sep 1961, *Womersley* NGF 13933 (BRI,K); above Wau on Edie Ck rd, July 1954, *Womersley & van Royen* 5939 (K); Edie Ck rd, Wau, Mar 1953, *Womersley & Taylor* 4788 (BRI, K); ditto, Oct 1965, *Frodin* NGF 26201 (BRI). CENTRAL PROVINCE: Woiitape, Aug 1968, *Ridsdale & Woods* NGF 33776 (BRI).

Distribution and habitat: *R. lanata* occurs in the Morobe and Central Provinces of Papua New Guinea between 1100-2300 m altitude. One specimen from the Sepik Province of New Guinea is also referable to this species. It occurs on the margins of montane rainforest or in secondary regrowth situations.

Phenology: Flowers and fruits have been collected throughout the year.

Affinities: *R. lanata* is closely related to *R. novoguineensis*. It is readily distinguished from this species by its villous leaves, short pedicels to 2 mm long and larger petals (4-5.5 × 3-4.5 mm).

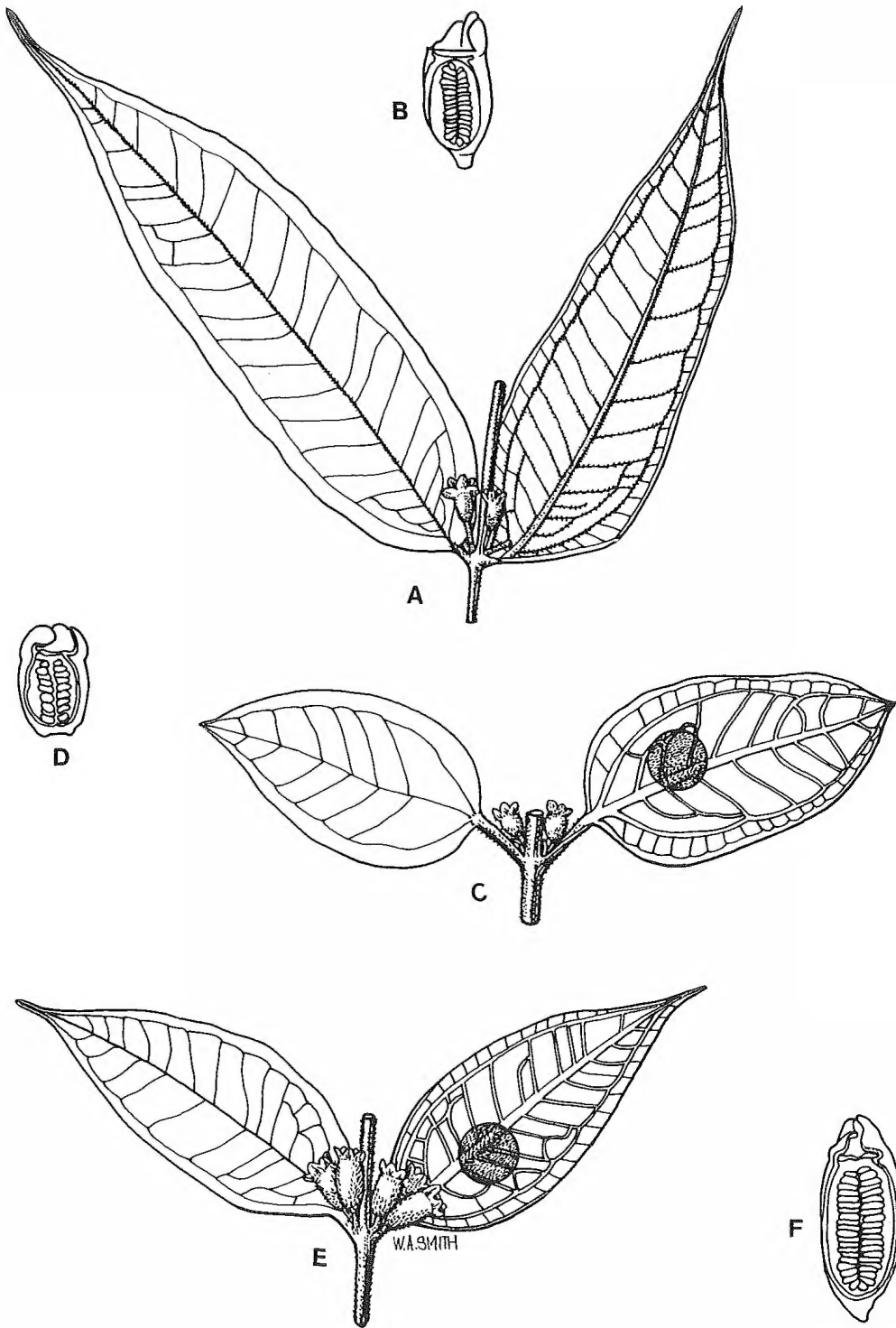


Fig. 2. *Rhodomyrtus novoguineensis*: A. flowering branchlet $\times 0.75$. B. L.S. of fruit $\times 2$. *Rhodomyrtus montana*: C. flowering branchlets $\times 1$. D. L.S. of fruit $\times 2$. *Rhodomyrtus lanata*: E. flowering branchlet $\times 0.75$. F. L.S. of fruit $\times 2$. A,B, Henty & Foreman 42614; C,D, van Royen & Sleumer 8205; E,F, Womersley & Thorne 12810.

Etymology: Named from the Latin *lanatus* (woolly) in reference to the indumentum of the leaves.

8. *Rhodomyrtus montana* Guymmer, *sp. nov.* affinis *R. novoguineensi* Diels sed ovulis paucioribus (48–54), bacca globosa et foliis brevioribus (3.7–7.5 cm longis) differt.
Typus: West Irian [Irian Jaya], Vogelkop Peninsula, Nettoti Ra., December 1961, *van Royen & Sleumer* 8087 (holo: BRI, iso: K,L distribuendi).

Shrubs to 4 m tall. Branchlets ferruginous-villous with simple hairs 0.4–1 mm long. Lamina elliptic or ovate-lanceolate, glabrous above except for hairs along the primary veins, ferruginous-villous below with hairs 0.4–1.2 mm long, 3-veined above the base, 3.5–7.5 cm long, 1.5–3.8 cm wide; apex acuminate, base cuneate; venation distinct, slightly sunken above, raised below, primary marginal veins 1–3 mm from base, 2–6 mm from margin; oil glands obscure. Petiole pubescent, 2–6 mm long. Inflorescence 1 per axil, monads, 10–15 mm long; pedicels pubescent, 1–4 mm long; prophylls ovate, acute, pubescent, 1.5–2.5 mm long. Flowers 5-merous; perigynium globular, villous, 3.2–4 mm long, 2.5–3 mm diameter at anthesis. Calyx lobes semi-circular to broadly ovate, villous, persistent, 2.5–3 mm long, 1.5–2.2 mm wide. Petals white inside, pink or brownish outside, 6–8 mm long, 4–5 mm wide. Stamens 76–88, in 4 whorls, filaments 3.5–4 mm long; anthers 0.4–0.5 mm long. Ovary 3-locular; ovules 16–18 per loculus, in 2 series of 8 or 9 on axile placentas; style villous at base, glabrous above, 4–5.2 mm long; stigma capitate, 0.4–0.5 mm diameter. Fruit globular, ferruginous-villous, crowned by persistent calyx lobes, 4–5 mm diameter. Seeds 48–54, reniform, flattened, finely reticulate, 1.5–1.6 mm long. **Figs 2C & D.**

Specimens examined: West Irian. Vogelkop Peninsula: N slope of Mt Nettoti, path to Wekari R., Dec 1961, *van Royen & Sleumer* 8087 (K,L); crest of Mt Nettoti, Dec 1961, *van Royen & Sleumer* 8205 (K,L); Mt Kobreimot above Testega, Anggi Lakes, Jan 1962, *Sleumer & Vink* BW 14152 (K,L).

Distribution and habitat: *Rhodomyrtus montana* is known from the Vogelkop Peninsula, West Irian, New Guinea, at an altitude of 1900–2300 m. The species has been recorded from the edges of montane rainforest and montane thicket.

Phenology: Flowering specimens have been collected in December and January, and fruiting specimens in January.

Affinities: *Rhodomyrtus montana* appears closely related to *R. lanata* based on its similar leaf tomentum and inflorescences. Nevertheless it is distinguished from this species by its smaller leaves, globular berries and fewer ovules per loculus.

Etymology: The specific epithet refers to the montane distribution of the species.

Acknowledgements

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Reference

SCOTT, A.J. (1978). A revision of *Rhodomyrtus* (Myrtaceae). *Kew Bulletin* 33: 311–329.

Index of Collectors

Each collector's number is followed by the number of the species in parentheses. The list includes collections seen for *R. trineura*, *R. sericea*, *R. canescens* and *R. pervagata* not cited above.

Adams 20048 (1). Althofer 313 (3). Anderson 4010 (1).

Balgooy 1589 (4). Bailey AQ 045203 (4). Barry AQ 435873 (1). Barnes s.n. (3). Birch 32 (4). Blake 15812 & Webb (4). Blake 18806 (1), 20273 (4). Boyland 417 (5). Brass 577 (6), 1948 (4), 2098 (2), 2122 (5), 2297 (2), 5110 (6), 19333 (1), 20061 (2), 20134 (2), 23122 (6), 29576 (7), 33723 (3), 33754 (4). Byrnes 3925 (1).

Carr 13a (2). Clarkson 6572 (2). Clarkson & Stanley 672 (1). Clemens 5452A (7), AQ 045266 (1), AQ 045227 (1). Conn *et al.* 328 (7). Craven & Schodde 1108, 1311 (7).

Dallachy AQ 278670 (1). Darbyshire & Hoogland 8365 (6). Dockrill 86 (4), 900 (3). Doggrell s.n. (4). Domin 7310, 7311, 7312, 7313 (4).

Einar du Reitz s.n. (2), AQ 045206 (4). Everist 6063 (3), 9692 (1).

Fell 674, 1162 (1). Flecker 2033, 2287 (4), 9196 (3). Foreman *et al.* LAE 52473 (6). Foreman ex Katik LAE 59225 (6). Foreman *et al.* LAE 52473 (6). Foreman & Katik LAE 59225 (6). Forster 3869 & Liddle (3). Francis AQ 045182 (1). Frodin NGF 26201 (7).

Gibbs 6331 (4). Gray 328 (4), 1902, 2292, 2294, 2458 (3), 2459 (4). Guymer 2011 (1), 2013, 2017 (4), 2020 (2), 2027 (4), 2028 (3), 2056 (4), 2059 (5), 2065 (4). Haines 183 Q (4). Hamilton brothers AQ 45077 (3). Henty & Foreman NGF 42614 (6). Hockings 5(1). Hoover 6436 (6). Hyland 03086 (1), 5770 (4), 7058 (2), 7328 (5), 7348 (5), 7554, 7645 (1), 7762, 7767 (1), 7806 (1), 7975 (2), 8209, 8383, 8390 (1), 8488 (2), 8646 (4), 8687 (5), 9029, 9051 (1), 11423, 11424 (2), 11677 (4), 11681, 11682 (2), 11703 (4), 11710 (4).

Irvine 131 (4), 143 (3), 657 (2), 671 (1), 1005, 1116 (3).

Kajewski 1282 (2), 1379 (4), 1438 (5). Kanis 2149 (3). Katik & Larivita LAE 62065 (7). Kerenga & Wabo LAE 74380 (7).

Lelean & Stevens LAE 51245 (6).

Macfarlane 045223 (1). Martin & Hyland 1894 (2), Michael 681 (4). Millar NGF 12156, 23475 (7). Moriarty 276 (1), 1967 (4), 1974, 1975 (3), 1978 (4), 1984 (3), 2003 (4), 2005, 2007 (3), 2095, 2136, 2250 (4).

Pearson IA 10 (1). Pullen 7901 (6).

Ridsdale NGF 30279 (7). Ridsdale & Woods NGF 33776 (7).

Sanderson 124, 799 (4), 1208 (5), 1307 (4). Sankowsky G 575 & Sankowsky (3). Sayers NGF 19502, NGF 19935 (7). Sayers & Hartley 12609 (7). Scarth-Johnson s.n. (2). Schodde 3269 (4), 3292 (1), 4176 (3). Sharpe 1594, 1762, 4237 (1). Sleumer & Vink BW 14152 (8). Smith 3194 (1), 4043 (5), 4167 A, 4280 (4), 4664 (3), 10086 (2), 10437a (3), 11078, 11503 (5), 14633 (2). Stevens & Lelean 58273 (6). Stocker 660, 1737 (4). Stone & Streimann 10377 (6). Streimann 8375 (6), 8506 (7). Streiman 8375 (6), 8506 (7). Streimann & Katik NGF 28988 (6).

Tarden s.n. (4). Thomson 126 (1). Thorne 20733 & Dansie (3). Thorsborne 116, 219 (1). Tracey 14203, 14851, 15492 (1).

Unwin 32, 445, 762 (4).

van Altena 3620, 3650 (4). Van denberg & Galore NGF 42113 (6). van Royen & Sleumer 8087, 8205 (8). Verdcourt & Johns 5110 (7). Volck QF 57/108 (3), AQ 45209 (4).

Warrian 5006 (1). Webb & Taylor 4788 (7). Webb & Thorne NGF 12810 (7). Webb 5558, 5755 & Tracey (4). Webb & Tracey 5759 (3), 8625 (4), 9129, 9531, 9637, 10685 (1), 10794, 10804, 10939 (2), 12008 (1). Webb & van Royen 5939 (7). Whiffen & Risley 642 (4). White 1530 (4), 2986, 2986, 8016, 8991 (1), s.n., 10606 (2). Wilson 744 (4). Womersley 5375, NGF 13933 (7).